REMARKS

The Office Action issued June 6, 2001 has been reviewed and the comments of the U.S. Patent and Trademark Office have been considered. Claims 1, 21, 22, 28 and 32 have been amended. Claims 8, 10, 22-31, and 34-35 are withdrawn from consideration but remain pending. Thus, claims 1-35, including generic claim 32, are pending in the application and are submitted for reconsideration by the Examiner.

Claims 1-7, 9, 21, 32 and 33 stand rejected under 35 U.S.C. § 102(b) as being unpatentable over U.S. Patent No. 4,896,127 to Hida. Claims 11-20 stand rejected under 35 U.S.C. § 103 as being unpatentable over Hida. Applicant respectfully traverses this rejection because Hida fails to teach or suggest the claimed invention as a whole as recited in amended claims 1, 21 and 32.

Claims 1 and 32 recite an apparatus with, *inter alia*, a spring member, wherein the spring member exerts a radially outwardly directed spring force against the sleeve that slows the response of the movement the armature along the axis in either of a first direction or a second direction opposite to the first direction when the electromagnetic coil is energized. The spring is effective to cause a friction force that slows the response of the movement of the armature (i.e. a damping) in both directions of movement of the armature along the axis when the electromagnetic coil is energized. Support for this amendment to the claims can be found in the originally filed specification at, for example, page 3, lines 15-19, page 5 and Figure 1.

In contrast, Hida, as stated in column 5, lines 18-23 and 30-35, relies on a one-way orifice valve 58 on the plunger 26 to control or dampen the movement of the plunger 26 in only one direction towards the air space "A" instead of a friction force that slows the response of the movement of the armature in a first and a second directions, as recited in amended claims 1 and 32. It is submitted that the seals 50 serve only to isolate the air space "A" from the exterior of the

solenoid 20 (column 4, lines 27-30) to allow the one-way orifice valve 58 to function. Applicant respectfully asserts that Hida does not teach or suggest that the seals 50 exert a force so as to slow the response of the solenoid in both directions of movement, as recited in amended claims 1 and 32. Accordingly, the rejection to amended claims 1 and 32 should be withdrawn because the claimed invention as a whole recites features not taught or suggested by Hida.

Claim 21 recites a method of stabilizing an electromagnetic actuator that is achieved, in part, by exerting a radially outwardly directed force against the sleeve by a member disposed in the at least one groove so as to slow the response of the movement of the armature along the axis in the first and second directions when the electromagnetic coil is energized. Support for this amendment to can be found in the originally filed specification at, for example, page 3, lines 15-19, page 5 and Figure 1.

In contrast, as asserted above, Hida relies on a one way orifice valve 58 on the plunger 26 to control or dampen the movement of the plunger 26 in only one direction towards the air space "A" instead of a friction force that slows the response of the movement of an armature in the first and second directions, as recited in amended claim 21. Moreover, Applicant respectfully asserts that Hida does not teach or suggest that the seals 50 exert a force, as noted above, so as to slow the response of the solenoid in both directions of movement, as recited in amended claim 21. Thus, claim 21 is patentable over Hida because the claimed invention as a whole recites features not taught or suggested by Hida.

Notwithstanding the deficiencies in Hida, the Office Action asserts that it would have been obvious to modify Hida based upon the legal basis of design choice to achieve the claimed invention as a whole. However, even if each of the identified features can be combined with Hida, such proposed combinations cannot achieve the claimed invention as a whole because the plunger

of Hida relies on a one-way orifice valve 58 on the plunger 26 to control or dampen the movement of the plunger 26 in only one direction towards the air space "A" instead of a spring member having a friction force acting in both directions of movement of the armature. Furthermore, the motivation to modify Hida in order to reach the claimed invention as a whole is supplied by Applicant's own disclosures, which have been improperly relied upon. Thus, the rejection should be withdrawn and the claims allowed.

Claims 2-7, 9 and 11-20 depend ultimately from a respective one of allowable claims 1, 21 and 32, are therefore allowable at least for this reason, as well as for reciting additional features.

Applicant respectfully requests rejoinder of withdrawn claims 8, 10, 22-31 and 34-35 because generic claim 32 is now in condition for allowance.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants respectfully request the allowance of pending claims 1-35.

Applicants respectfully invite the Examiner to contact the undersigned by telephone at 202.467.7203 if any outstanding issues remain unresolved.

EXCEPT for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. §§ 1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account No. 50-0310. This paragraph is intended to be a **CONSTRUCTIVE PETITION FOR EXTENSION OF TIME** in accordance with 37 C.F.R. § 1.136(a)(3). Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached pages are captioned: **"Version with Markings to Show Changes Made."**

Respectfully submitted,

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Version with Markings to Show Changes Made

IN THE CLAIMS:

Claims 1, 21, 22, 28 and 32 have been amended as follows:

1. (Amended) An apparatus, comprising:

an armature having at least one groove formed on an exterior surface thereof;

a sleeve extending along an axis, the armature being ~~movably~~ disposed for movement in a first direction and a second direction opposite the first direction along the axis in the sleeve; ~~and~~

an electromagnetic coil operative to cause movement of the armature along the longitudinal axis as a response to energization of the electromagnetic coil;

a spring member disposed in the at least one groove in the armature and in sliding contact with the sleeve, wherein the spring member exerts a radially outwardly directed spring force against the sleeve that slows the response of the movement of the armature along the axis in the first and second directions when the electromagnetic coil is energized.

21. (Amended) A method of stabilizing an electromagnetically operated actuator, comprising:

providing a coil and an armature, the armature being disposed for movement in a first direction and a second direction opposite the first direction along the axis in the sleeve, the armature having at least one groove formed on an exterior surface thereof;

~~providing a sleeve wherein the armature is movably disposed in the sleeve;~~moving the armature along the axis as a response to energization of the coil; and

exerting a radially outwardly directed ~~disposing a spring member~~force against the sleeve by a member disposed in the at least one groove so as to slows the response of the movement of the armature along the axis in the first and second directions when the electromagnetic coil is energized ~~the armature and in sliding contact with the sleeve whereby the spring member exerts a radially outwardly directed spring force against the sleeve~~.

22. (Amended) An apparatus, comprising:

a sleeve extending along an axis and having at least one groove formed on an interior surface thereof;

an armature, the armature being~~movably~~ disposed for movement in a first direction and a second direction opposite the first direction along the axis in the sleeve;

an electromagnetic coil operative to cause movement of the armature as a response to energization of the electromagnetic coil; and

a spring member disposed in the at least one groove in the sleeve and in sliding contact with the armature, wherein the spring member exerts a friction force against the armature that slows the response of the movement of the armature along the axis in the first and second directions when the electromagnetic coil is energized.

28. (Amended) An apparatus, comprising:

an armature having at least one radial opening formed therein;

a sleeve extending along an axis, the armature being~~movably~~ disposed for movement in a first direction and a second direction opposite the first direction along the axis in the sleeve;

an electromagnetic coil operative to cause movement of the armature along the axis as a response to energization of the electromagnetic coil;

a spring member disposed in the at least one radial opening in the armature; and

a bearing member disposed on one end of the spring and in sliding contact with the sleeve, wherein the bearing member exerts a radially outwardly directed force against the sleeve that slows the response of the movement of the armature along the axis in the first and second directions when the electromagnetic coil is energized.

32. (Amended) An apparatus, comprising:

an armature;

a sleeve extending along an axis, the armature being~~movably~~ disposed for movement in a first direction and a second direction opposite the first direction along the axis in the sleeve;

an electromagnetic coil operative to cause movement of the armature along the axis as a response to energization of the electromagnetic coil; and

a spring member in sliding contact with one of the armature and the sleeve, wherein the spring member creates a friction force between the sleeve and the armature that slows the response of the movement of the armature along the axis in the first and second directions when the electromagnetic coil is energized.

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